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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/726,838	12/03/2003	Sangwook Kim	42P17884	5541
8791	7590	10/10/2006	EXAMINER	
BLAKELY SOKOLOFF TAYLOR & ZAFMAN 12400 WILSHIRE BOULEVARD SEVENTH FLOOR LOS ANGELES, CA 90025-1030			NGUYEN, HIEP T	
			ART UNIT	PAPER NUMBER
			2187	

DATE MAILED: 10/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/726,838

Applicant(s)

KIM ET AL.

Examiner

Hiep T. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 16-30 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 22-25 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 16-18, 26 and 27 is/are rejected.
- 7) ☒ Claim(s) 3-6, 19-21, 28-30 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

1. This Office Action is a response to the amendment filed July 24, 2006. Applicant has canceled claims 7-15. Claims 1-6 and 16-30 are pending in the application.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
 - a. A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
3. Claims 1-2, 16-18, and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art (APA) [figure 3] in view of Dwarkadas, U.S. Patent No. 6,684,298 [hereafter, Dwarkadas].
 - a. As per claim 1:
 - i. The APA teaches a computer system comprising a processor having a trace cache.
 - ii. The APA, however, does not teach that the cache is dynamically reconfigurable to provide specific configuration of the cache.
 - iii. Reconfiguring a cache to suit a particular application and/or to further improve the cache performance and/or energy consumption has been known and widely practiced in the pertinent art. Dwarkadas is one of the many references teaches such dynamically cache reconfiguration [col. 2, lines 44-51].
 - iv. One having ordinary skill in the art, who is familiar with the dynamically reconfigured cache, looks at the teaching of the APA would lead he or she to further incorporate the feature of dynamically reconfiguring a cache into that of the APA so as to further improve the system performance and/or system energy consumption, or to suit a particular application.

- v. Therefore, it would have been obvious to one having ordinary skill in the pertinent art to employ logic into the APA cache controller for dynamically reconfiguring the trace cache to provide application specific configuration of the trace cache. The ability to further improve system performance and/or system energy consumption provides sufficient suggestion and motivation to one having ordinary skill in pertinent art to do such further logic employment in the APA system.
- b. As per claim 2: the further claimed limitation of "wherein the trace cache comprises: a tag array; a data array; and a next fetch address (NFA) array" is also taught by the APA [see a gain figure 3].
- c. Claims 16-18 and 26-27: the claimed system basically encompasses the same scope as that in claims 1-2. The further claimed limitation of "instruction cache", "execution core" and/or "main memory" are no more than necessary elements in a computer system. Accordingly, claims 16-18 and 26-27 are also rejected for the same basis as set forth for claims 1-2.

Allowable Subject Matter

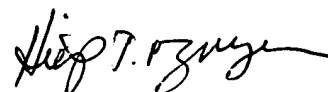
- 4. Claims 22-25 are allowed over the prior art of record.
- 5. Claims 3, 19, and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Consequently, claims 4-6, 20-21, and 29-30 would also be allowed over the prior art of record.

Conclusion

- 6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
 - a. John, 5,867,422, teaches a dynamically reconfigurable cache.
 - b. Brown, 5,727,208, teaches reconfiguration of a cache for best utilization of a processing operation.

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- c. Calder et al., 2004/0111708, teaches reconfiguration of cache and other structures with the intention of saving energy.
 - d. Cao, 6,782,550, teaches a cache that can be dynamically reconfigured.
 - e. Maiyuran et al., 6,665,775, teaches a dynamically reconfigured cache for simultaneous accesses by multiple computing engines.
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hiep T. Nguyen whose telephone number is (571) 272-4197. The examiner can normally be reached on Monday-Friday from 6:30 AM-3:00 pm.
8. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald Sparks can be reached on (571) 272-4201. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.
9. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Hiep T Nguyen
Primary Examiner
Art Unit 2187

HTN